OP-61

Hazardous Air Pollutants (HAPs) and its implications on Health and Environment

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Hazardous air pollutants are such pollutants that cause or can cause cancer or other severe health effects, such as reproductive or birth defects, or harmful environmental and ecological effects, also known as toxic air pollutants or air toxicants. Air pollution, not only because of its effect on climate change, but also its impact on public and individual health due to rising morbidity and mortality, is one of the greatest scourges of our era. In humans, there are many toxins that are essential factors in disease. Among them, particles of variable but very small diameter, Particulate Matter (PM), enter the respiratory system by inhalation, causing respiratory and cardiovascular disorders, reproductive and central nervous system dysfunctions and cancer.

While ozone plays a protective role in the stratosphere against ultraviolet irradiation, it is harmful in high concentrations at ground level, affecting the respiratory and cardiovascular systems as well. In addition, air contaminants that are toxic to humans are called nitrogen oxide, Sulphur dioxide, volatile organic compounds (VOCs), dioxins, and polycyclic aromatic hydrocarbons (PAHs). When breathed in at high levels, carbon monoxide can also provoke direct poisoning. Heavy metals such as lead, when ingested into the human body, can lead to direct poisoning or chronic toxicity, depending on exposure. Diseases from the above-mentioned compounds primarily include respiratory disorders such as Chronic Obstructive Pulmonary Disease (COPD), asthma, bronchiolitis, lung cancer, cardiovascular events, dysfunction of the central nervous system, and skin diseases. Last but not least, as natural disasters do, climate change arising from environmental contamination impacts the geographical distribution of many infectious diseases. Public awareness, combined with a multidisciplinary approach by science experts, is the only way to resolve this issue; national and international organizations have to address the emergence of this challenge and propose sustainable solutions.

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